

# Low Back Pain: Treatment and Challenges

Christine Keating, MD, MMM

Physical Medicine and Rehabilitation

The Baptist Back and Spine Clinic

Healthy Back clinic

Tamara Fryer, PT, cert. MDT

Healthy Back/Functional Restoration Supervisor

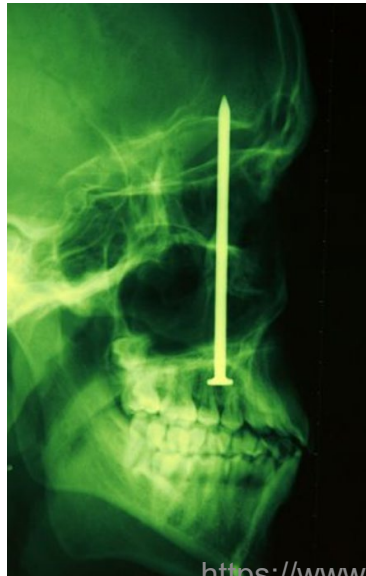
We have nothing to disclose

# Objectives

- Pain Myths
- Current state of back pain management (3'C's)
- Share a model of approaching back pain with consistency and common terminology
- Review evaluation components using a back treatment model
- Summarize “key take aways”

# Pain Myths

- Back pain is easily managed
- The amount of pain experienced is proportional to the amount of tissue damage



# LOW BACK PAIN is COMMON

- Low back pain is a COMMON human condition
- 70-85% of people will have back pain at some point in their life (80 million Americans are experiencing back pain at any one time)
- The most common cause of activity limitation in people less than 45
- LBP is a common problem but many different causes, and many times a definite source can not be found
- Majority of LBP is mechanical (90%)



# LOW BACK PAIN is **COSTLY**

- Ranked one of top 5 most costly medical conditions
- Estimated 87 Billion Dollars spend annually
- The number one predictor for returning pain is previous back pain
- Lifetime recurrence rate 85%
- Return to work diminishes with time off work
- Early return to daily activities and exercise leads to less chronic disability

**#1**

Cause of work-related disability in persons under 45

**2nd**

Most common reason for missing work

**TOP 5**

Most common reasons for Physician visits

# JAMA 2016

December 27, 2016

## US Spending on Personal Health Care and Public Health, 1996-2013

Joseph L. Dieleman, PhD<sup>1</sup>; Ranju Baral, PhD<sup>2</sup>; Maxwell Birger, BS<sup>1</sup>; et al

**Results** From 1996 through 2013, \$30.1 trillion of personal health care spending was disaggregated by 155 conditions, age and sex group, and type of care. Among these 155 conditions, diabetes had the highest health care spending in 2013, with an estimated \$101.4 billion (uncertainty interval [UI], \$96.7 billion-\$106.5 billion) in spending, including 57.6% (UI, 53.8%-62.1%) spent on pharmaceuticals and 23.5% (UI, 21.7%-25.7%) spent on ambulatory care. Ischemic heart disease accounted for the second-highest amount of health care spending in 2013, with estimated spending of \$88.1 billion (UI, \$82.7 billion-\$92.9 billion), and low back and neck pain accounted for the third-highest amount, with estimated health care spending of \$87.6 billion (UI, \$67.5

**RESULTS** Total health care spending increased from an estimated \$1.4 trillion in 1996 (13.3% of gross domestic product [GDP]; \$5259 per person) to an estimated \$3.1 trillion in 2016 (17.9% of GDP; \$9655 per person); 85.2% of that spending was included in this study. In 2016, an estimated 48.0% (95% CI, 48.0%-48.0%) of health care spending was paid by private insurance, 42.6% (95% CI, 42.5%-42.6%) by public insurance, and 9.4% (95% CI, 9.4%-9.4%) by out-of-pocket payments. In 2016, among the 154 conditions, low back and neck pain had the highest amount of health care spending with an estimated \$134.5 billion (95% CI, \$122.4-\$146.9 billion) in spending, of which 57.2% (95% CI, 52.2%-61.2%) was paid by private insurance, 33.7% (95% CI, 30.0%-38.4%) by public insurance, and 9.2% (95% CI, 8.3%-10.4%) by out-of-pocket payments. Other musculoskeletal disorders accounted for the second highest amount of health care spending (estimated at \$129.8 billion [95% CI, \$116.3-\$149.7 billion]) and most had private insurance (56.4% [95% CI, 52.6%-59.3%]). Diabetes accounted for

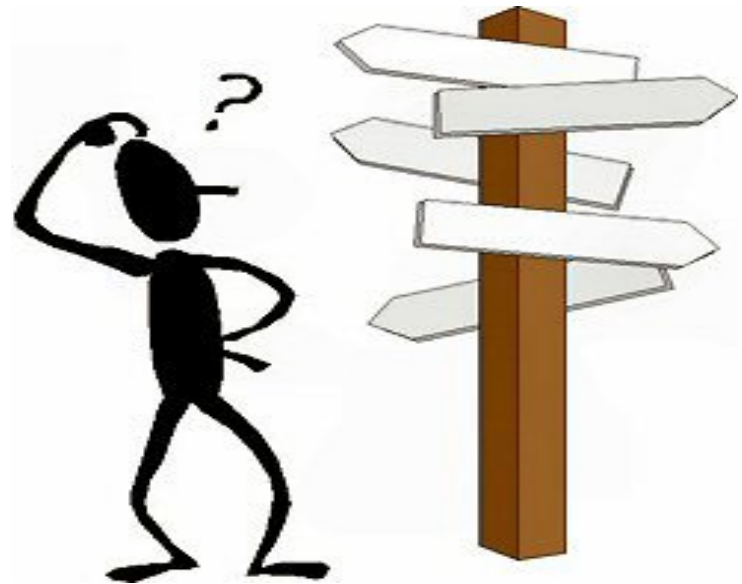
by out-of-pocket payments. In 2016, among the 154 conditions, low back and neck pain had the highest amount of health care spending with an estimated \$134.5 billion (95% CI, \$122.4-\$146.9 billion) in spending, of which 57.2% (95% CI, 52.2%-61.2%) was paid by private insurance, 33.7% (95% CI, 30.0%-38.4%) by public insurance, and 9.2% (95% CI, 8.3%-10.4%) by out-of-pocket payments. Other musculoskeletal disorders accounted for the second highest

# WHY????

Why is treating back and neck pain so expensive?

# LOW BACK PAIN is **CONFUSING**

- Over 10 different specialties
- Over 30 different treatment approaches
- Each with a slightly different vocabulary and point of view and diagnosis



# Current treatment



# There is no consistency and no common language



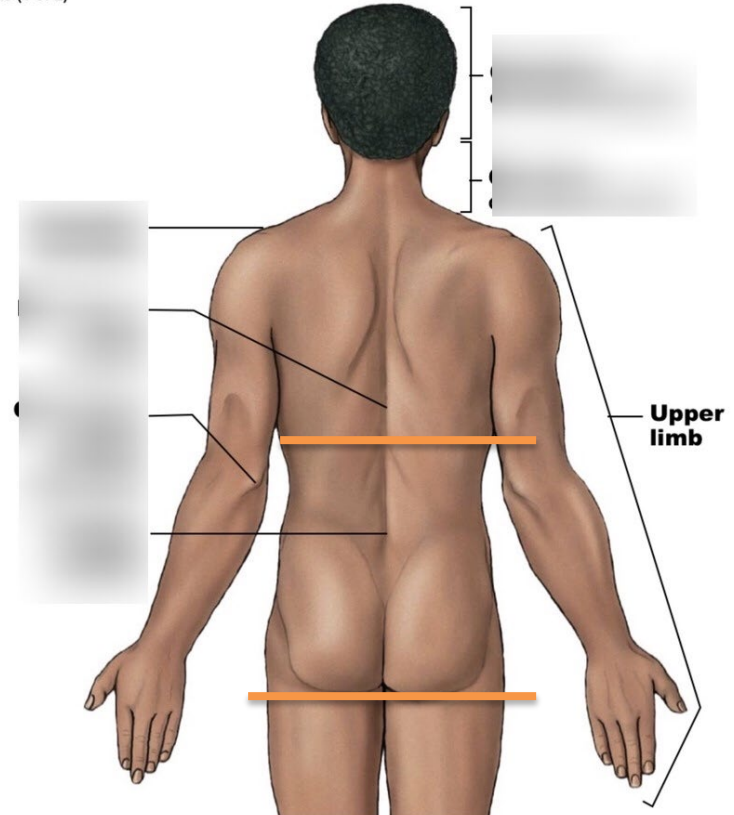
# How many different diagnoses are available for low back pain?

- Low back pain acute or chronic with or without sciatica, left, right, bilateral
- Dorsalgia
- Lumbago
- DDD
- Spondylosis

# What is low back pain?

- It is a symptom not a disease
- It is between lower rib margins and buttock creases and can have leg pain and sometimes neurologic deficits of legs

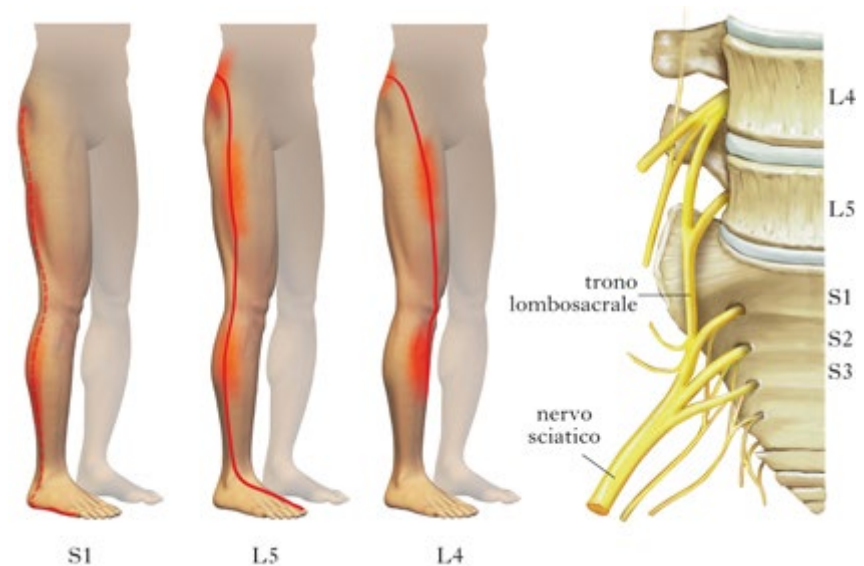
marks (1 of 2)



**b** Posterior view in the anatomical position

# What is radicular pain?

- Dermatomal leg pain
- Leg pain worse than back pain
- Constant
- Positive SLR, or other neurologic findings
- Not all leg pain is radiculopathy



# Management: Current State

- We can obtain a lot of information... but is it always useful?
- Current trend of increased medical expenditures (*Jama 2013*)
  - 23,000 visits
  - MRI usage increased 7% to 11%
  - Narcotic use increased 19.3% to 29%
  - Without improved outcomes

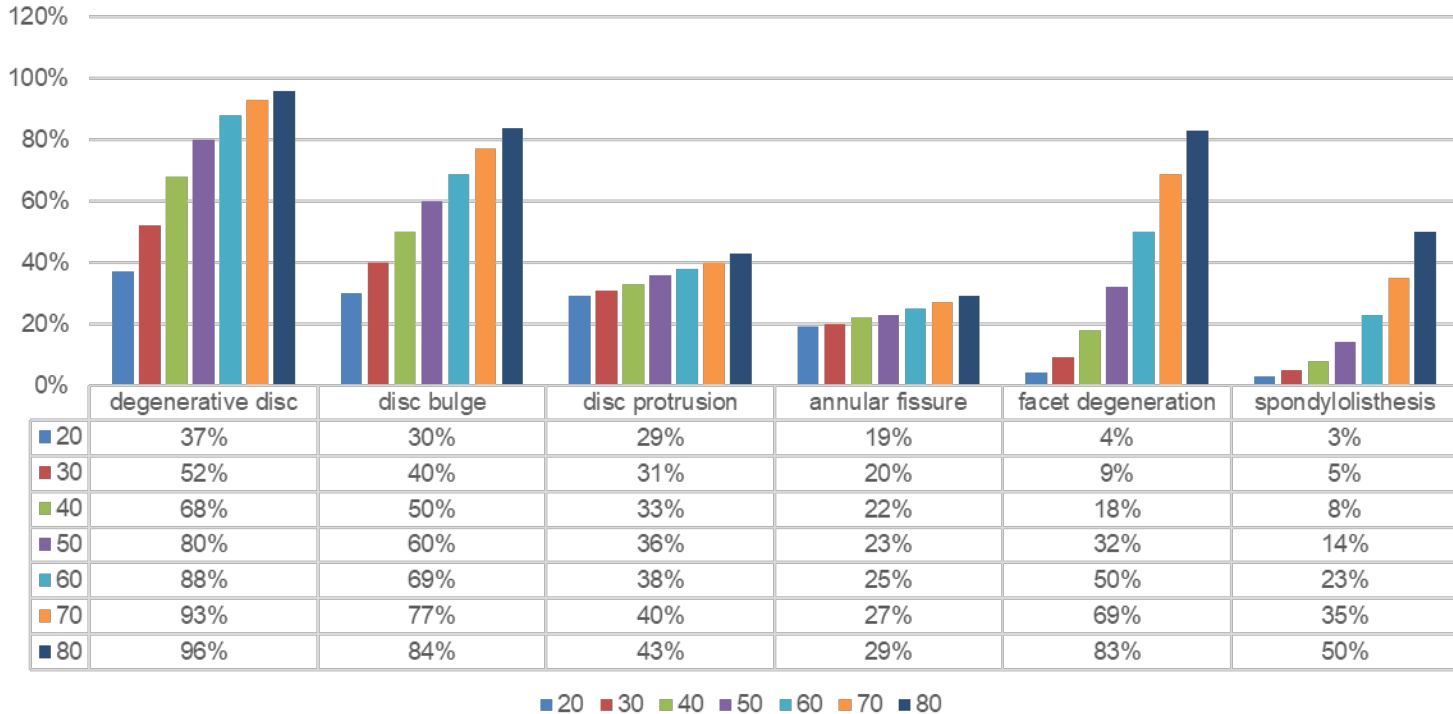


# Pathoanatomical Findings



## Lumbar spine Imaging findings in asymptomatic individuals

Prevalance % by age group



## Degenerative changes are commonly found in spine imaging in pain free individuals

Many imaging based degenerative changes are likely a normal part of aging

# The spine Journal in 2017

- One patient went to 10 MRI centers over a 3-week period
- 2 reference MRIs were done initially and proceeding other 10 at same facility
- There were 49 distinct findings
- Zero findings were reported in all 10 studies
- One finding spondylolisthesis was in 9 of 10
- 32.7% of findings appeared once
- Indicating high rate of false positives
- Where you have MRI and who reads it does matter

# Guidelines:

Evidence-Based Clinical Guidelines for  
Multidisciplinary Spine Care:

## Diagnosis & Treatment of Low Back Pain

**Diagnosis and Treatment of Low Back Pain: A Joint Clinical Practice  
Guideline from the American College of Physicians and the American  
Physical Medicine and Rehabilitation Society**  
**Noninvasive Treatments for Acute, Subacute, and  
Chronic Low Back Pain: A Clinical Practice Guideline  
From the American College of Physicians**  
**Surgery for low back pain: a review of the evidence  
for an American Pain Society Clinical Practice  
Guideline**



Roger Chou<sup>1</sup>, Jamie Baisden, Eugene J Carragee, Daniel K Resnick, William O Shaffer,  
John D Loeser

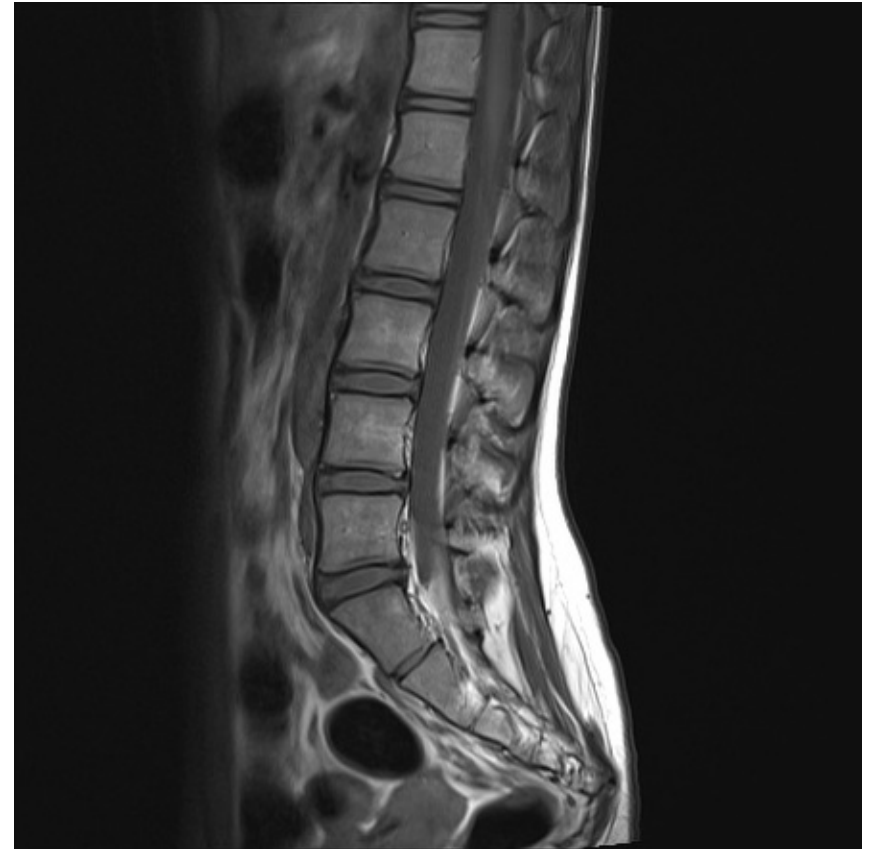
Affiliations + expand

# MRI: when should we use this tool

- MRI is expensive
- Several studies have shown that patients without red flags that get early imaging do not have improved outcomes
- MRI has a high prevalence of abnormal findings in individuals without pain, so difficult to attribute patients' symptoms to certain imaging findings
- MRI can cause unnecessary stress
- Deyo et al showed higher rate of spine surgeries in states with higher utilization of MRI for LBP but no association with better outcomes

# MRI

- Should not be delayed when red flags are present
- Are useful for surgical planning and injections



# Problem and Solution

- Often problem in clinic is patient expectation
- They want to know what is there? MRI
- They are hurting and don't want to be told it will get better and do not need meds
- There have been public health outreach initiatives

# 2018 Lancet Low Back Pain Series

- Awareness of the global burden of low back pain
- Outlined current guidelines for treatment
- Highlighted gaps between evidence and practice with inappropriately high use of opiates, rest, imaging, injections and surgery
- Doing more of same will not improve back pain disability
- We need to align practice with evidence, reduce the focus on spinal abnormalities, and insure promotion of activity and function

# 2018 Lancet Low Back Pain Series

- Acute low back pain generally gets better quickly, but recurrence is common
- Back pain can become persistent and disabling in some people
- Initial high pain, psychological distress, and multiple other areas of pain increase risk of disabling pain
- Patients are more likely to have disabling back pain if Low socioeconomic status
- LBP increases cost in both health care and social support systems

# Guideline recommendations

- Labs and imaging should not be part of early management
- Greater emphasis is placed on self management, physical and psychological therapies and complimentary medicine
- Less emphasis on medication and surgery for non-specific low back pain

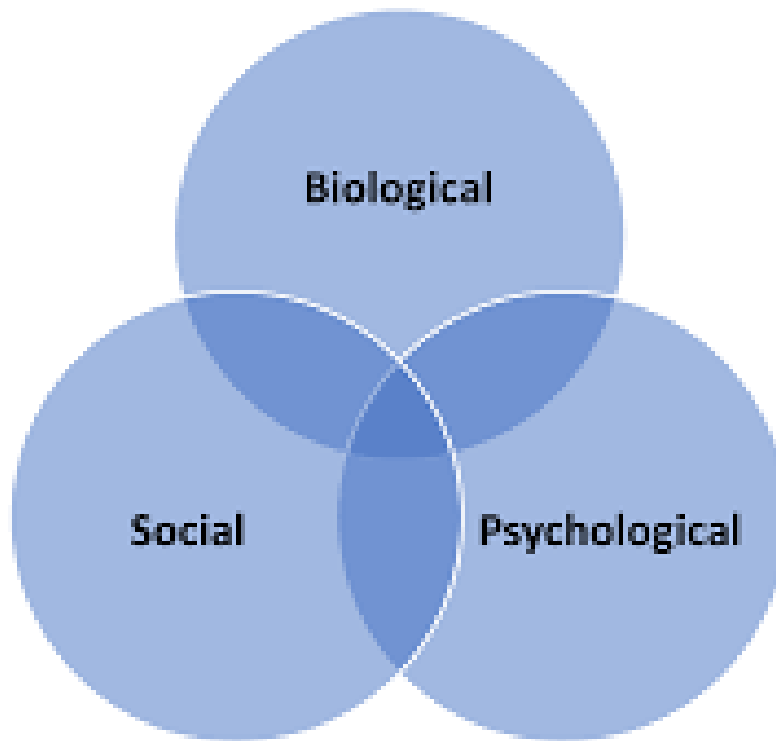
# Early management: Motion is Lotion

- Advice and education
- Reassurance that they do not have serious disease
- Encouragement to avoid bed rest
- Supervised exercise, PT

# A patient comes into the clinic with acute back pain. What are the primary concerns/emotions?

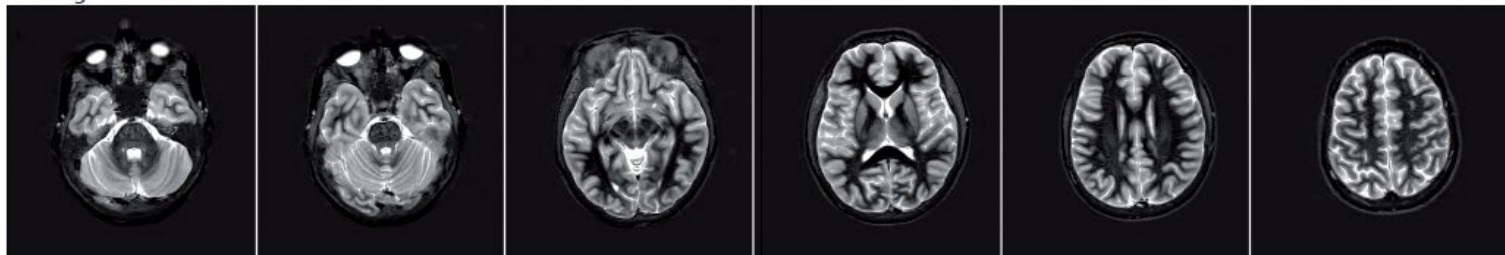
- FEAR
- ANXIETY
- DISABILITY

# Biopsychosocial Model

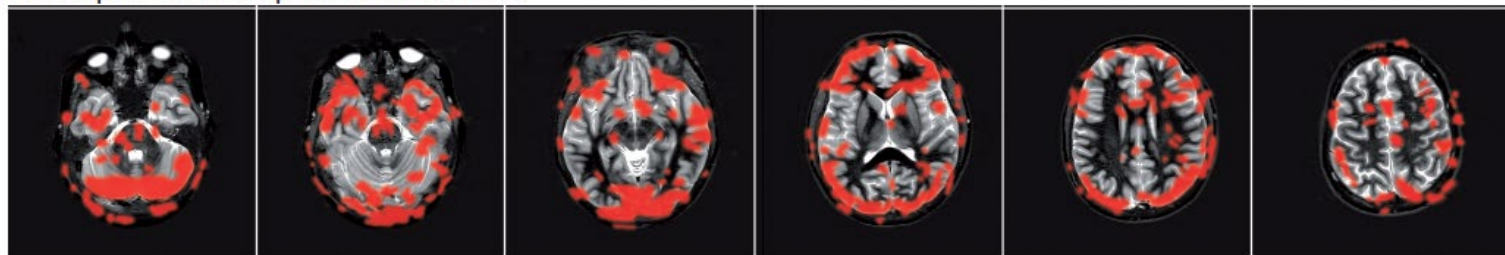


# Beliefs matter (fMRI)

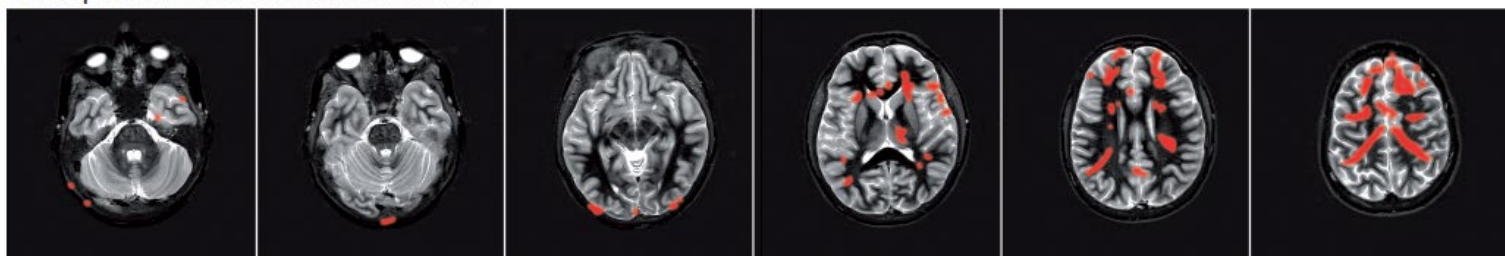
Resting fMRI Scan:



Painful spine movements prior to PNE fMRI Scan:



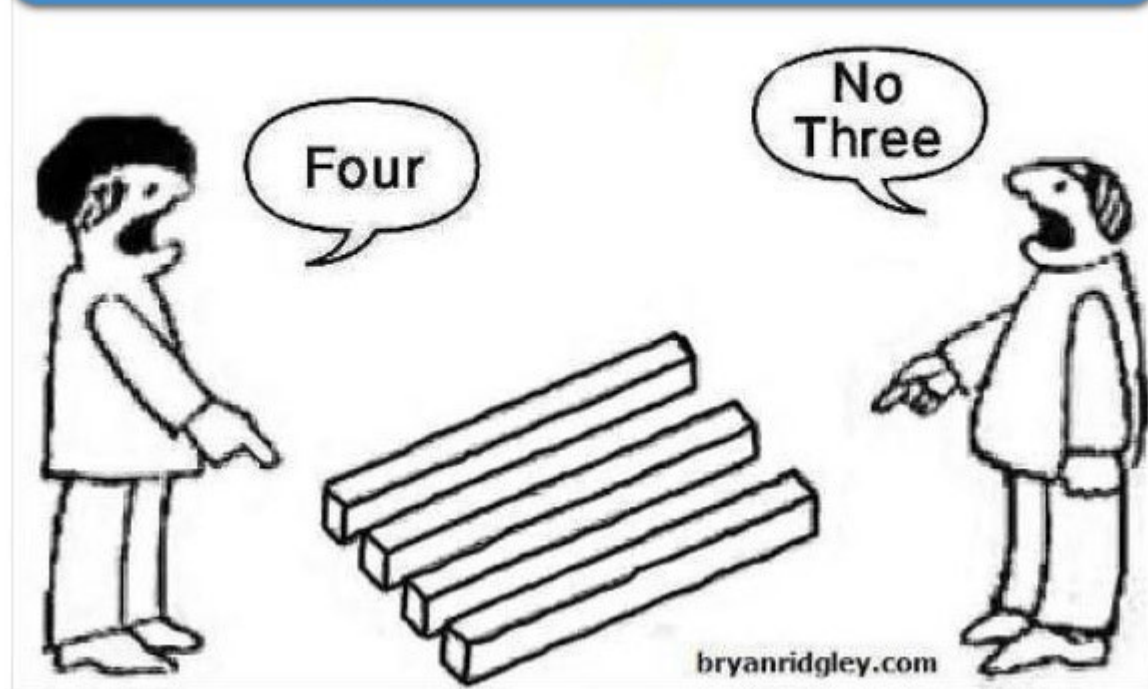
Same spine movements after PNE fMRI Scan:



Louw A, Puentedura EJ, Diener I, Peoples RR. Preoperative therapeutic neuroscience education for lumbar radiculopathy: a single-case fMRI report. *Physiotherapy Theory and Practice*. Oct 2015;31(7):496-508.

It is your point of view

## Perception Matters



# Fear and Anxiety



Words are, of course, the most powerful  
drug used by mankind”

Rudyard Kipling

Words can inspire. And words can  
destroy. Choose yours well.

Robin Sharma

# Words matter

- We need to communicate better to help people recover.
- Psychological factors influence pain
- We need to promote wellness not disease
- Imaging often leads to diagnoses like disc bulge  
DD”DISEASE” and arthritis
- Do these promote healing or inhibit healing



# Sticks and Stones

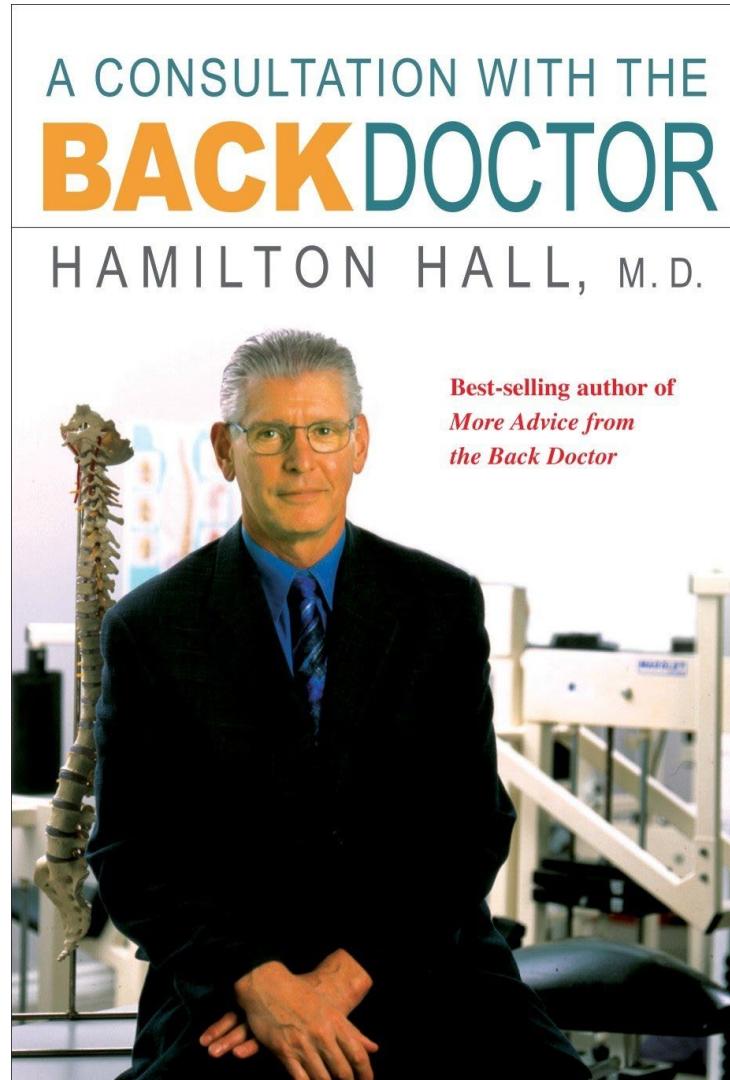
| Words to Avoid               | Alternatives          |
|------------------------------|-----------------------|
| Chronic degenerative changes | Normal age changes    |
| Wear and tear                | Normal age changes    |
| Don't worry                  | Everything will be ok |
| Bone on bone                 | Narrowing tightness   |
| Disease                      | condition             |
| neurological                 | Nervous system        |
| effusion                     | swelling              |



[This Photo](#) by Unknown Author is licensed under [CC BY-SA](#)

Most back pain  
can be  
managed  
through  
conservative  
measures

# BACK PAIN HAS PATTERNS



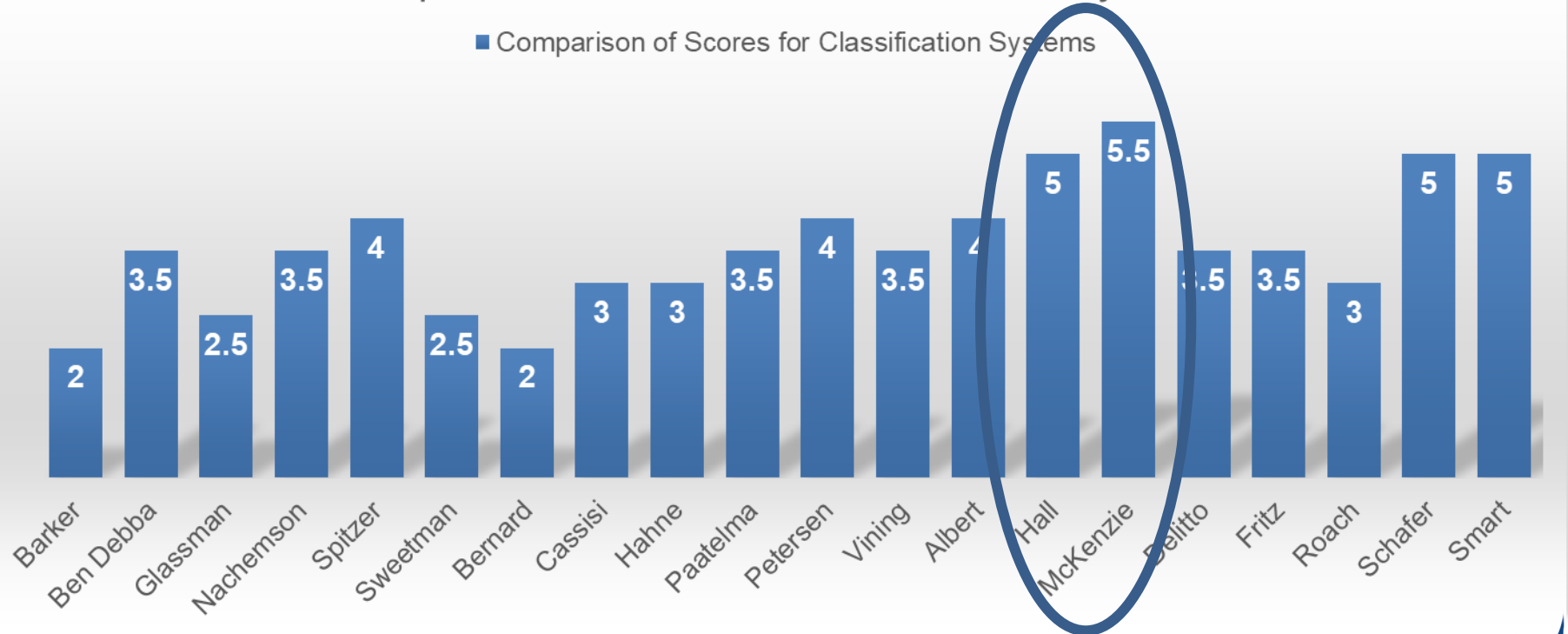
# MANY CLASSIFICATIONS EXIST

## Comparison to other methods

Stynes 2016

Comparison of Scores for Classification Systems

■ Comparison of Scores for Classification Systems



# Key Points of Pattern Recognition

## Pattern recognition is:

- Supported by evidence-based research
- Fast, reliable, and an efficient method that identifies mechanical back pain as well as less common but serious conditions that require more investigation
- Beneficial in decreasing the need for unnecessary investigations as well as unneeded medication utilization
- Helpful in identifying straight forward treatment strategies
- Beneficial to shift focus from cure to management with patient involvement and engagement



# It's what the **PATIENTS** need!

- Reassurance and a plan
- Let's make the first visit count
- Most back pain gets better with conservative management
- Management of emotions:
  - Fear
  - Anxiety
  - Disability

# Components of Pattern Identification



**#1**  
**Precise  
History**

**#2**  
**Physical  
Examination**

**#3**  
**Expected  
Response**

# #1. Precise history: Some key questions

1. Where is the pain the worst?
2. Is the pain constant or intermittent?
3. Does bending make the pain worse?
4. Red flag questions
5. What are you unable to do or having to change the way you do?



# Where is your pain the worst?



Pain felt more intensely in one or more of the following locations:

- Low back
- Upper buttock
- Coccyx
- Greater Trochanters
- Groin or genitals

**Back dominant pain** referred pain can radiate into legs

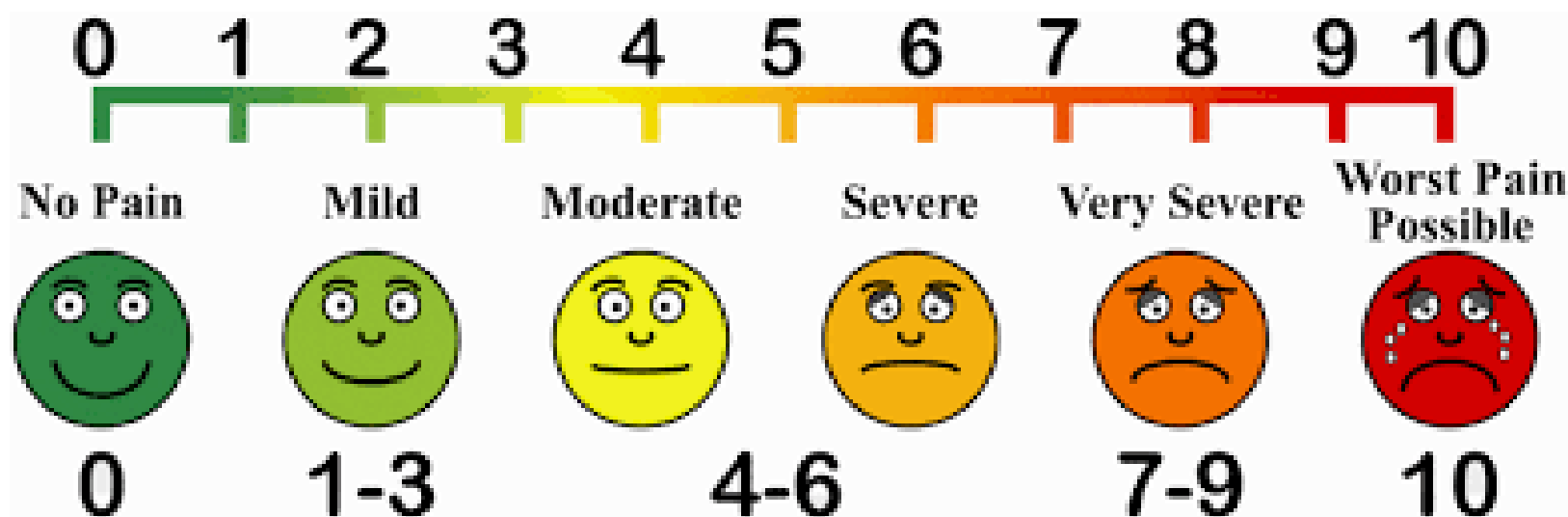


Leg dominant with pain felt more intensely at or below the gluteal fold:

- Thigh
- Calf
- Ankle
- Foot

**Leg dominant pain** represents radicular pain originating from direct irritation of nerve roots

# Is your pain **constant** or **intermittent**?



# Does **flexion** (sitting or bending) increase your worst pain?

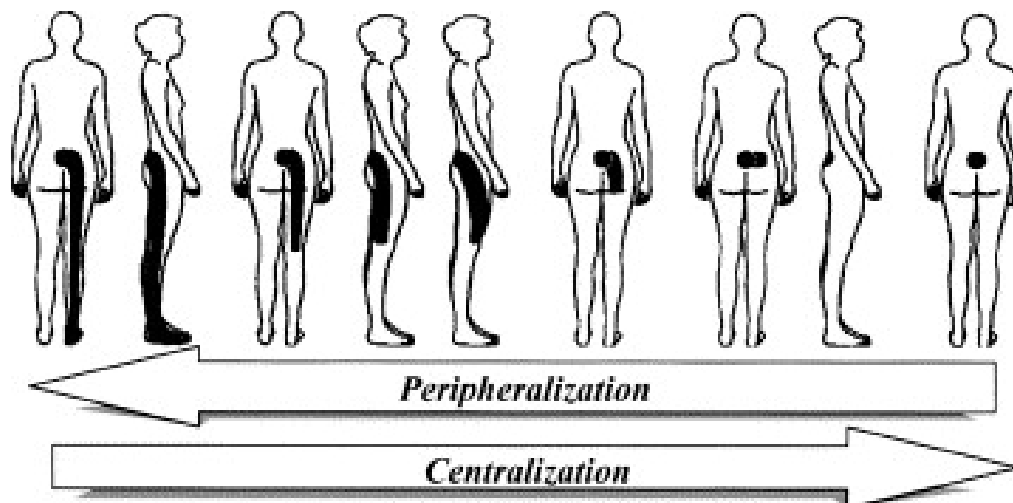


65%  
Functional  
Limitation

63%  
Aggravating  
Factor

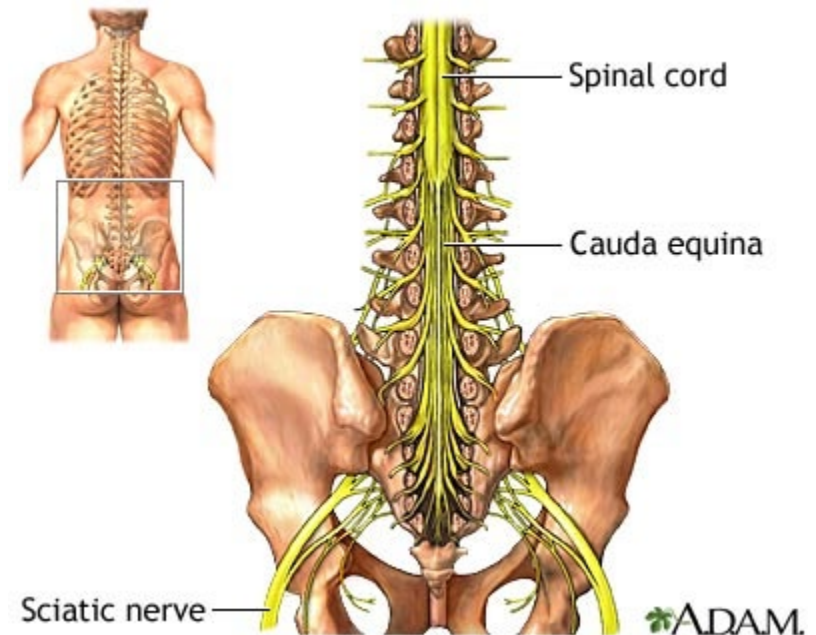
# What **movements or positions** reduce pain?

- Constant pain unaffected by changes in posture or activity can suggest non-mechanical etiology
- Conversely, movements or positions will guide the identification of treatment strategies



# RED Flags

- Bowel or bladder dysfunction
- Saddle anesthesia
- Bilateral paresthesias
- Lower extremity weakness
- History of cancer with unexplained weight loss
- Infection concerns
- trauma

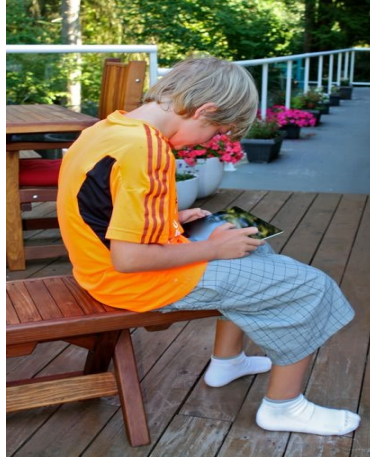
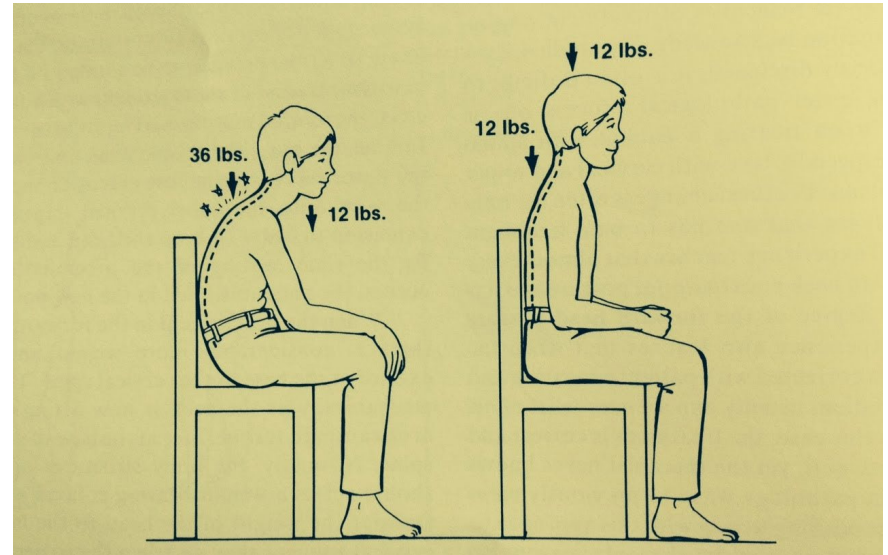


## #2. Physical Exam: Some key tests

- Posture
- Neurological
- Mandatory tests
- Mechanical or movement based



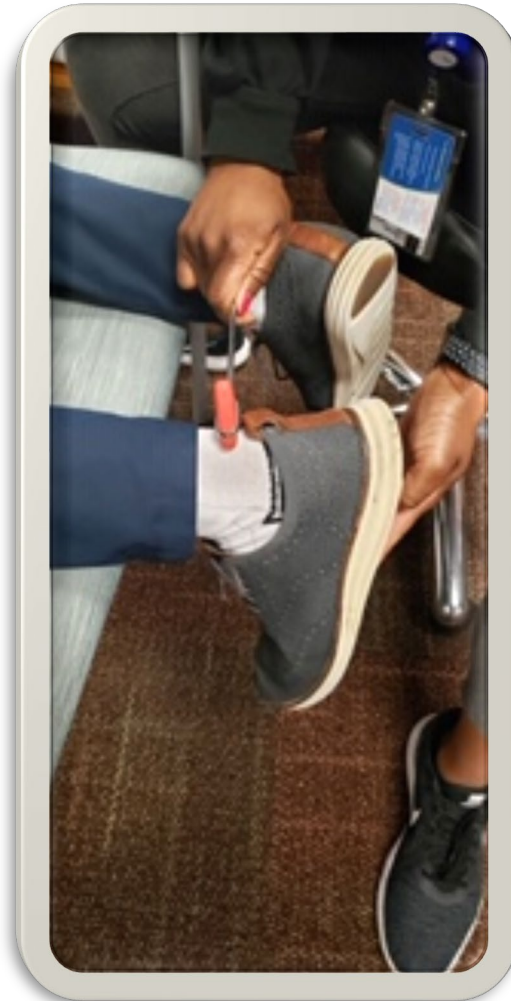
# Posture Assessment & Treatment



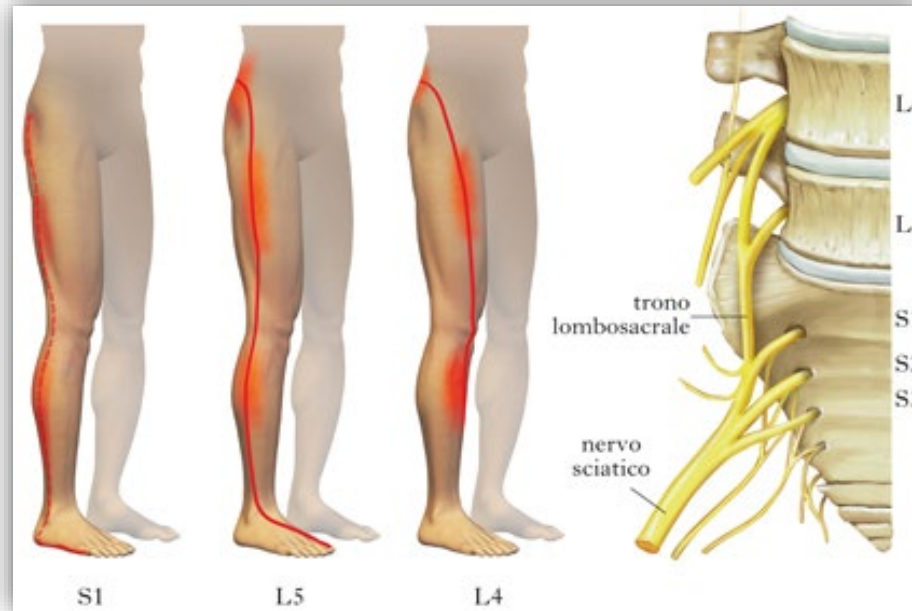
# Neurological

## Nerve Root Conduction

- L3-L4
  - Knee Reflex
  - Quadriceps power
- L5
  - Extensor Hallucis Longus
  - Heel Walking (L4)
  - Ankle dorsiflexion (L4)
  - Hip Abduction
- S1
  - Ankle Reflex
  - Flexor Hallucis Longus
  - Toe Walking
  - Plantar Flexion
  - Gluteus Maximus

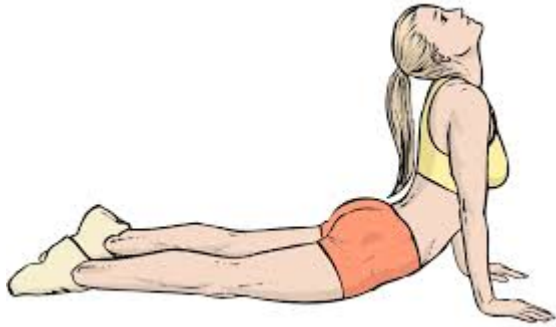


# Straight Leg Raise Test



- Classic test for nerve root irritation
- Passive test
- Positive if leg dominant pain is reproduced

# Mechanical Assessment of Back



- Assess Lumbar ROM
- Look for Directional Preference and Centralization
- Confirms mechanical pain



# Management in SUMMARY

- Rule out red flags
- Is it back dominant or leg dominant
- Encourage movement
- Reassure
- Reduce fear and anxiety



# Physical Therapy

- Self directed home program
  - Treat your own back book
  - Selected exercises
- Traditional physical therapy
  - acute pain
  - Goal to improve pain and return mobility with good HEP
- Healthy back
  - Recurrent or chronic pain
  - 10-20 visit program with active strengthening
- Functional Restoration program
  - Chronic pain education

# Epic Resource

## SmartText Lookup

patient guide

### Matches

★ OHS AMB PATIENT'S GUIDE TO BACK PAIN INSTRUCTIONS

### Preview

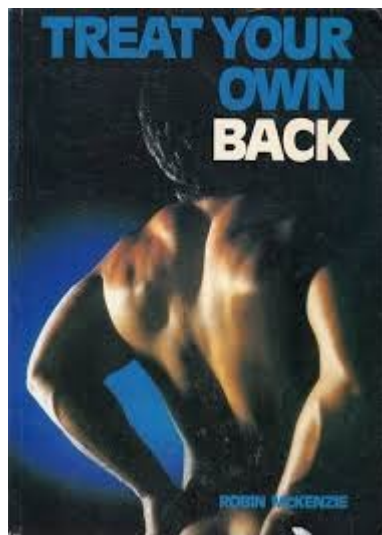
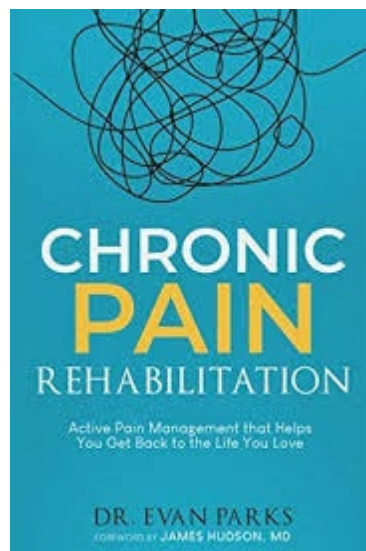
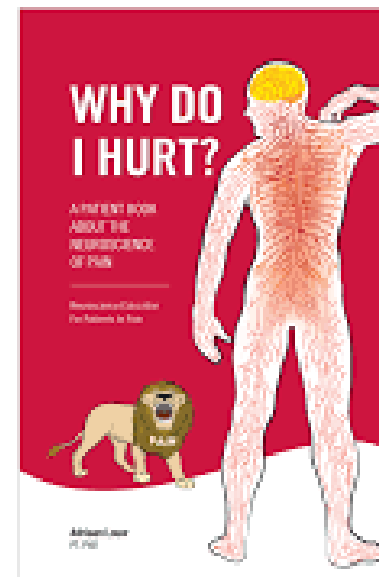
#### Patient's Guide to Back Pain

- Low back pain effects 2/3 of adults at some point in their lives. It is one of the top 10 reasons to go to the doctor.
- Back pain is scary, sudden, and painful but does usually improve. It is usually benign and is not caused by a serious underlying disease.
- 95% of back pain is mechanical, meaning something makes it worse (most commonly bending and sitting).
  - If bending makes it worse, extension stretches can be helpful.
  - If standing makes it worse flexion, stretches and z-lie can be helpful.
  - You can find details on these stretches and more in *Treat Your Own Back* by Robin McKenzie.
- Moving is the best medicine, even if it hurts. Bed rest is not recommended for back pain. Early return to daily activities leads to less chronic disability.
- Early involvement in Physical Therapy can decrease the likelihood of acute low back pain becoming chronic.<sup>1</sup>
- Back pain is a complex issue to diagnose. A definite diagnosis for back pain cannot be made for nearly 85% of patients at the initial visit.
- Medicine such as muscle relaxers and anti-inflammatories can be helpful. Narcotic pain medicine is not recommended for back pain.

#### Imaging Guidance:

- Imaging such as MRI's and X-rays are not necessary in the beginning and do not influence treatment or influence the course of acute back pain. Degenerative changes such as disc bulges and arthritis are common in people as young as 18 and with no pain.
- In people under 50 with no signs and symptoms of systemic disease no imaging is needed.<sup>2</sup>
- Conservative care for 6 weeks is recommended for patients with or without shooting nerve pain in arms/legs prior to MRI.<sup>2</sup>
- Imaging of patients with low back pain without indications of serious underlying conditions

# Additional Resources



# Prevention



# Summary

- Back pain is normal
- Reassure patients
- Reduce fear
- Encourage movement
- Watch language
- Screen for red flags and order MRI when needed
- Consider therapy



# Conclusion



# References

- Andersson GB. *Epidemiological features of Chronic Low Back Pain*. Lancet 1999; 354:581-585
- Bogduk N, McGuik B. *Medical Management of Acute & Chronic Low Back Pain*. vol 13 Amsterdam; Elsevier: 2002
- Borenstein, David G, O'Mara, James W.. Boden, scott. *The value of Magnetic Resonance imaging of the lumbar spine to predict low back pain in asymptomatic patients*. JBJS 2001. 83A: 9: 1306-1311
- Brinikji, W. et. al. Systmatic Literature review of imaging features of spinal degeneration in Asymptomatic Populations. AJNR Am J Neuroradiol 2015, 36 (4) 811-816
- Chou, roger. Amir Qaseem vinza snow, Donald casey. *Diagnosis and treatment of Low back pain: a joint clinical practive guideline from the American college of physicians and the American pain society*. **Ann internal med**. 2007;147:478-491
- Cyron BM, Hutton WC. *Variations in the amount and Distribution of Cortical Bone Across the Pars Interarticulars of L5. A predisposing Factor in Spondylolysis?* Spine 1979; 4: 163-167
- Deyo RA, Mirza SK, turner JA, et al. Overtreating chronic low back pain: time to back off? J Am Board fam med 2009; 22:62-68
- Deyo RA, Weinstein JN. *Low Back Pain*. N Engl J Med 2001; 344: 363-370
- Dunn, IAN; Proctor, Mark; Day, Arthur. *Lumbar Spine injuries in athletes* Neurosurgery Focus. 2006; 21(4)
- Foster, Nadine, Johannes R Anema, Dan Cherkin, Roger Chou et al. *Prevention and treatment of low back pain: evidence, challenges and promising directions*. **Lancet** 2018;391 2368-83Hall, Hamilton, MD. *A consultation with the back Doctor*. 2003
- Hall H, McIntosh G, Melles T. *A different Approach to Back Pain Diagnosis: Identifying a pattern of Pain*. Canadian Journal of CME 1994: 31-42.
- <https://www.psychologytoday.com/us/blog/pain-explained/201911/tale-two-nails>

# References

- Hall, H: effective spine triage: *Patterns of Pain*. The Ochsner Journal 2014; 14(1): 88-95
- Hartvigsen, Jan, Mark Hancock. *What low back pain is and why we need to pay attention*. Lancet 2018; 391:2356-67
- Hayden, Jill A, Rachel Ogilvie, Samuel A. Stewart. *Development of a clinical decision support tool for diagnostic imaging use in patients with low back pain: a study protocol*. BMC 2019; 3:1-8
- Herzog R, Elgort DR, Flanders AE, Moley PJ. [Variability in diagnostic error rates of 10 MRI centers performing lumbar spine MRI examinations on the same patient within a 3-week period.](#) . Spine J. 2016 Nov 554-561
- Huber M, M van Vilet M Giezenberg. Towards a patient centered operationalization of the new dynamic concept of health: a mixed methods study. *BMJ Open* 2016;6:e010091
- Kindrachuk D.R., Fournay D.R. *Spine surgery referrals redirected through a multidisciplinary care pathway: effects of non-surgeon triage including MRI utilization*. Journal of Neurosurgery spine 2014; 20: 87-92
- Lively, Matthew W., DO. *Sports medicine Approach to Low Back Pain*. South Med J. 2002; 95(6)
- Louw, Adriaan, Schmidt, Stephen, et al Pain Neuroscience Education: Teaching people about pain, 2018
- Quaseem, Amir, Timothy Wilt, Robert McLean and Mary Ann Forciea. ["Noninvasive treatments for acute, subacute, and chronic low back pain: a clinical practice guideline from the American college of physicians."](#) *Ann Intern Med*. 2017;166: 514-530.
- Roudsari, Bahman, Jarvik, Jeffrey. *Lumbar spine MRI for Low back pain: indications and yield*. AJR 2010; 195: 550-559.
- Stewart, Michael, Loftus, Stephen. *Sticks and stones: the impact of language in musculoskeletal rehabilitation*. J orthop sports phys ther 2018;48(7) 519-522
- Theiss, Steven. *Isthmic Spondylolysis and spondylosis* J of South orthop assoc 2001;10(3)
- Waddell G. *The Back Pain Revolution*. Kent, United Kingdom, Churchill-Livingstone, 1998, pp 103-117